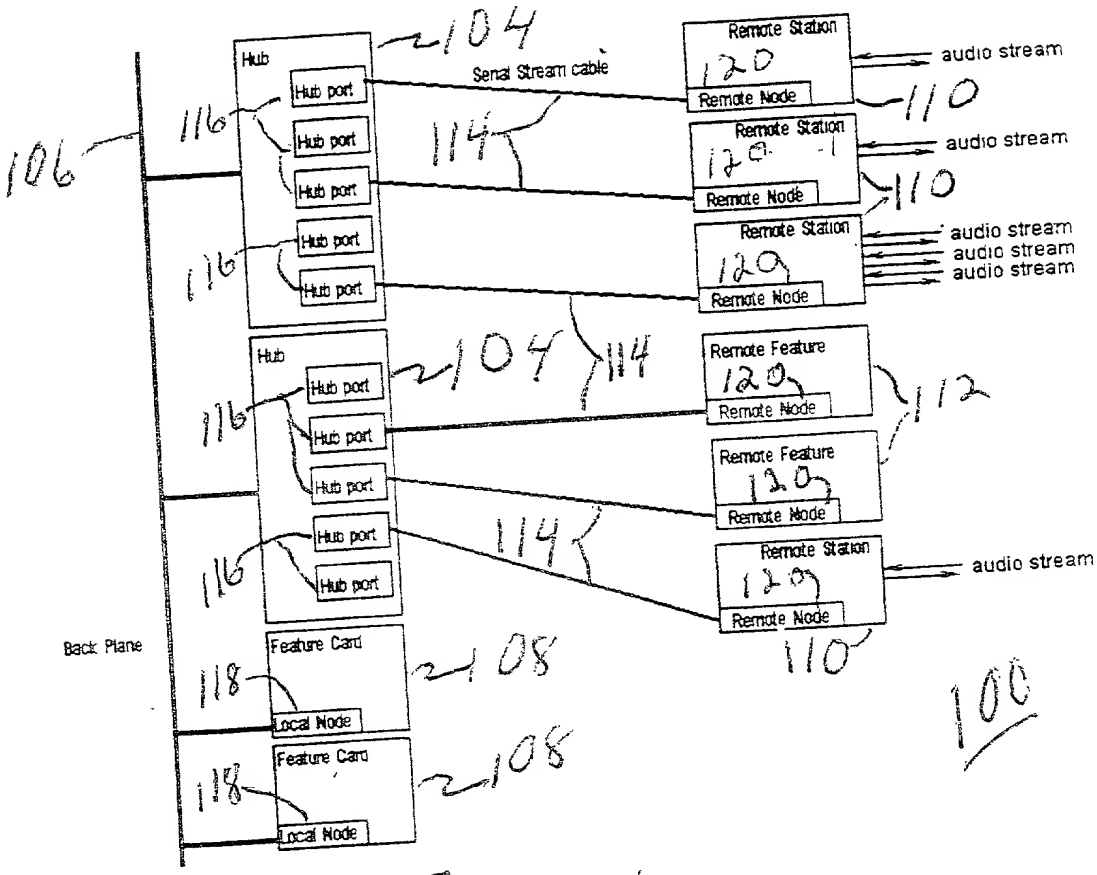
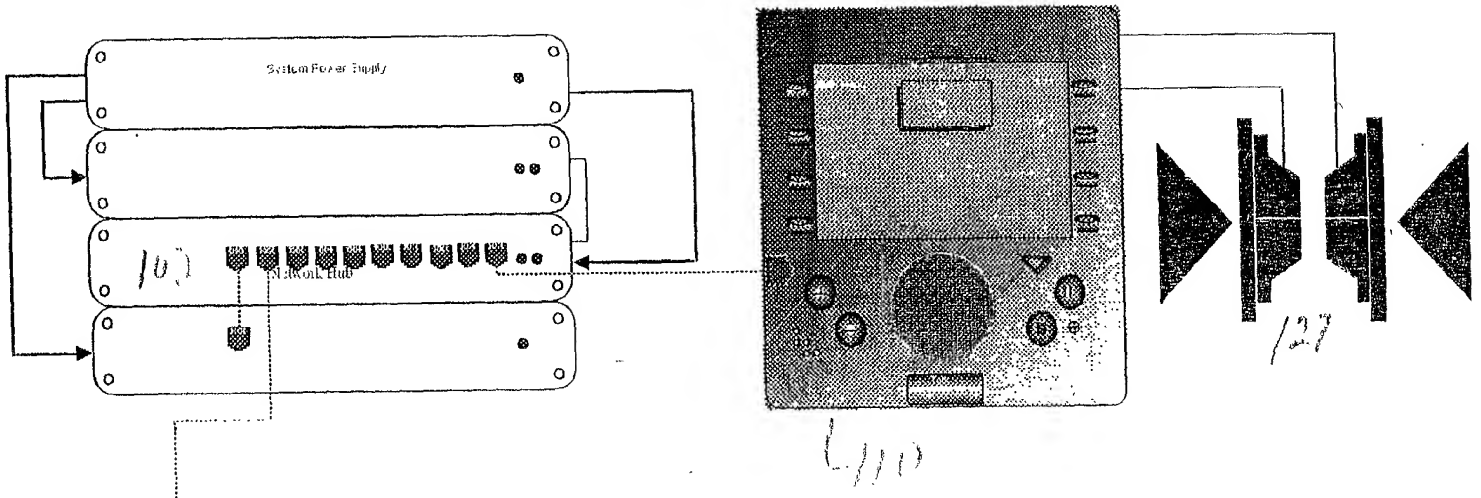
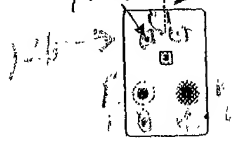

Hub
Hub port
Hub port
Hub port
Hub port
Hub port
Hub
Hub port
Hub port
Hub port
Hub port
Hub port
Back Plane
Feature Card
Local Node
Feature Card
Local Node
Serial Stream cable
Remote Station
120
Remote Node
Remote Station
120
Remote Node
Remote Station
120
Remote Node
Remote Feature
120
Remote Node
Remote Feature
120
Remote Node
Remote Station
120
Remote Node
audio stream
audio stream
audio stream
audio stream
audio stream
104
104
106
108
108
110
110
110
112
114
114
116
116
116
118
118
100

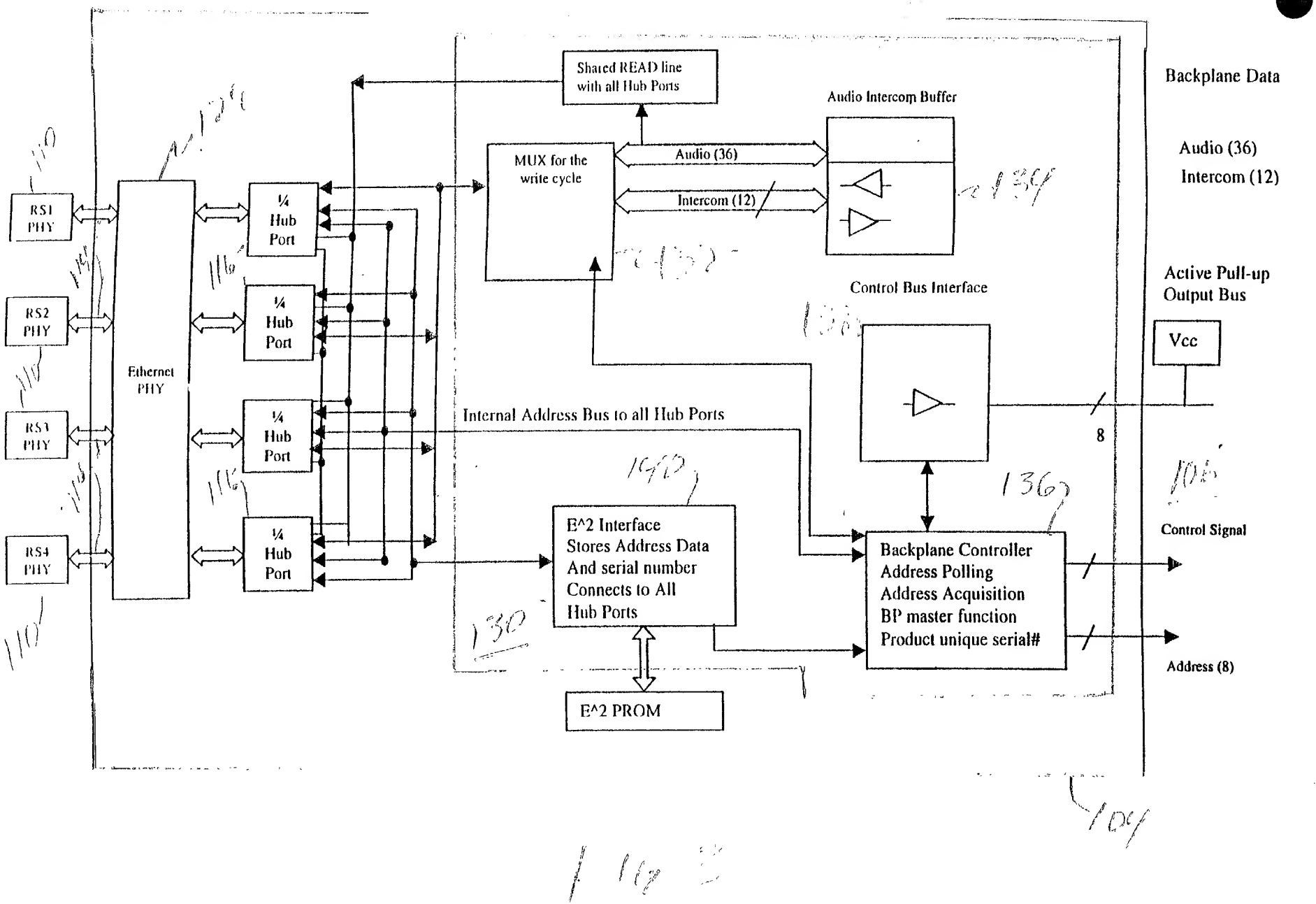
FIG. 1


System Power Supply
Network Hub
107
110
127


136a
108
136b
124
120
122

100

Fig. 2


RS1 PHY
RS2 PHY
RS3 PHY
RS4 PHY
Ethernet PHY
¼ Hub Port
¼ Hub Port
¼ Hub Port
¼ Hub Port
Shared READ line with all Hub Ports
MUX for the write cycle
Audio (36)
Intercom (12)
Audio Intercom Buffer
Control Bus Interface
Internal Address Bus to all Hub Ports
E^2 Interface
Stores Address Data
And serial number
Connects to All
Hub Ports
E^2 PROM
Backplane Controller
Address Polling
Address Acquisition
BP master function
Product unique serial#
Backplane Data
Audio (36)
Intercom (12)
Active Pull-up Output Bus
Vcc
8
Control Signal
Address (8)

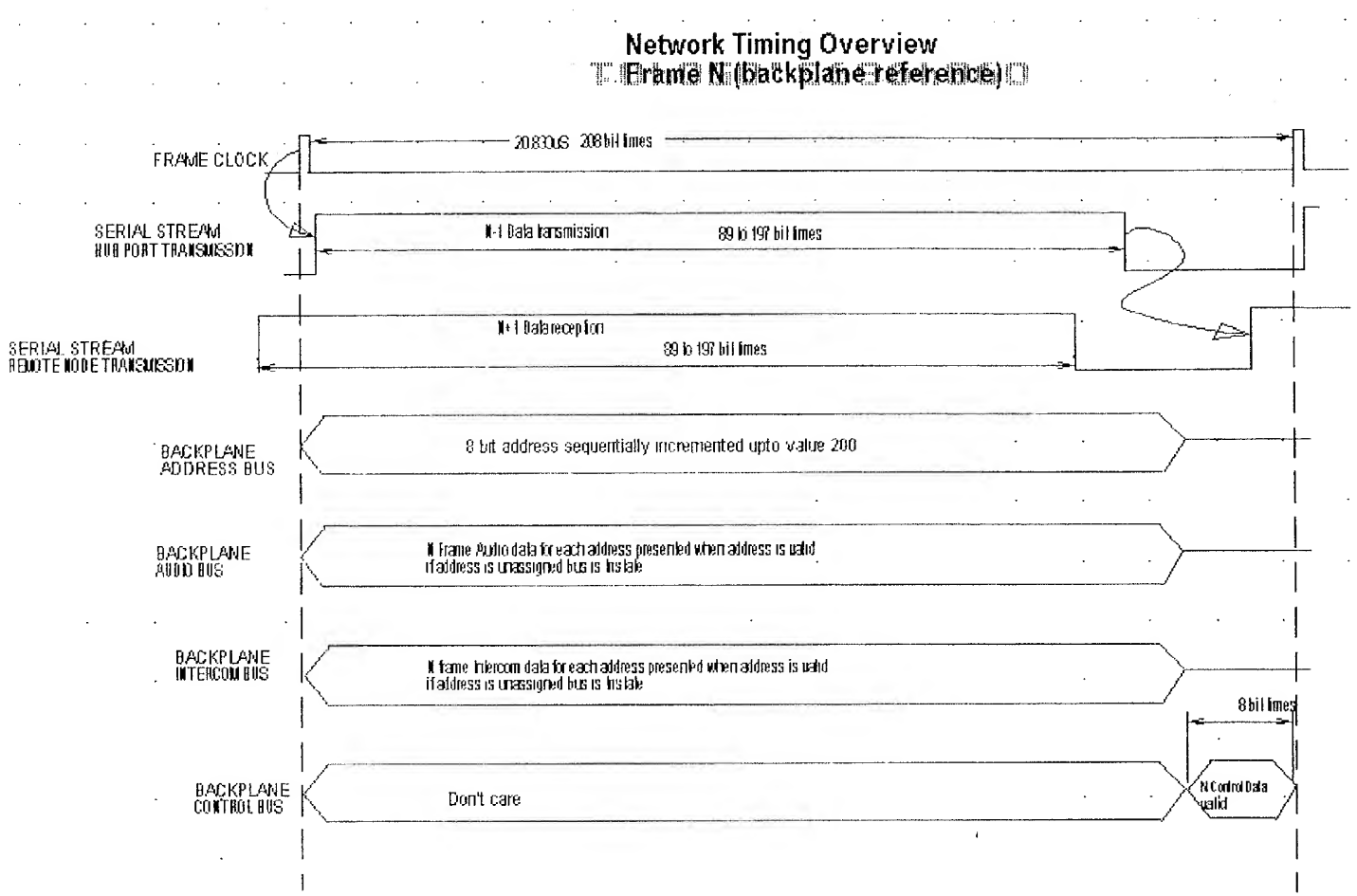


Fig. 4A

Preamble	CBS	Hub control	Data	Icom	Left audio 1	Right audio 1	Left audio 2	Right audio 2	Left audio 3	Right audio 3	Left audio 4	Right audio 4
AAAAABh	cbs	HC7 HC0	D7 D0	I11. I0	A1L17... A1L0	A1R17. A1R0	A1217. A2L0	A2R17 A2R0	A3L17. . A3L0	A3R17 . A3R0	A4L17... A4L0	A4R17 A4R0

Fig. 4B

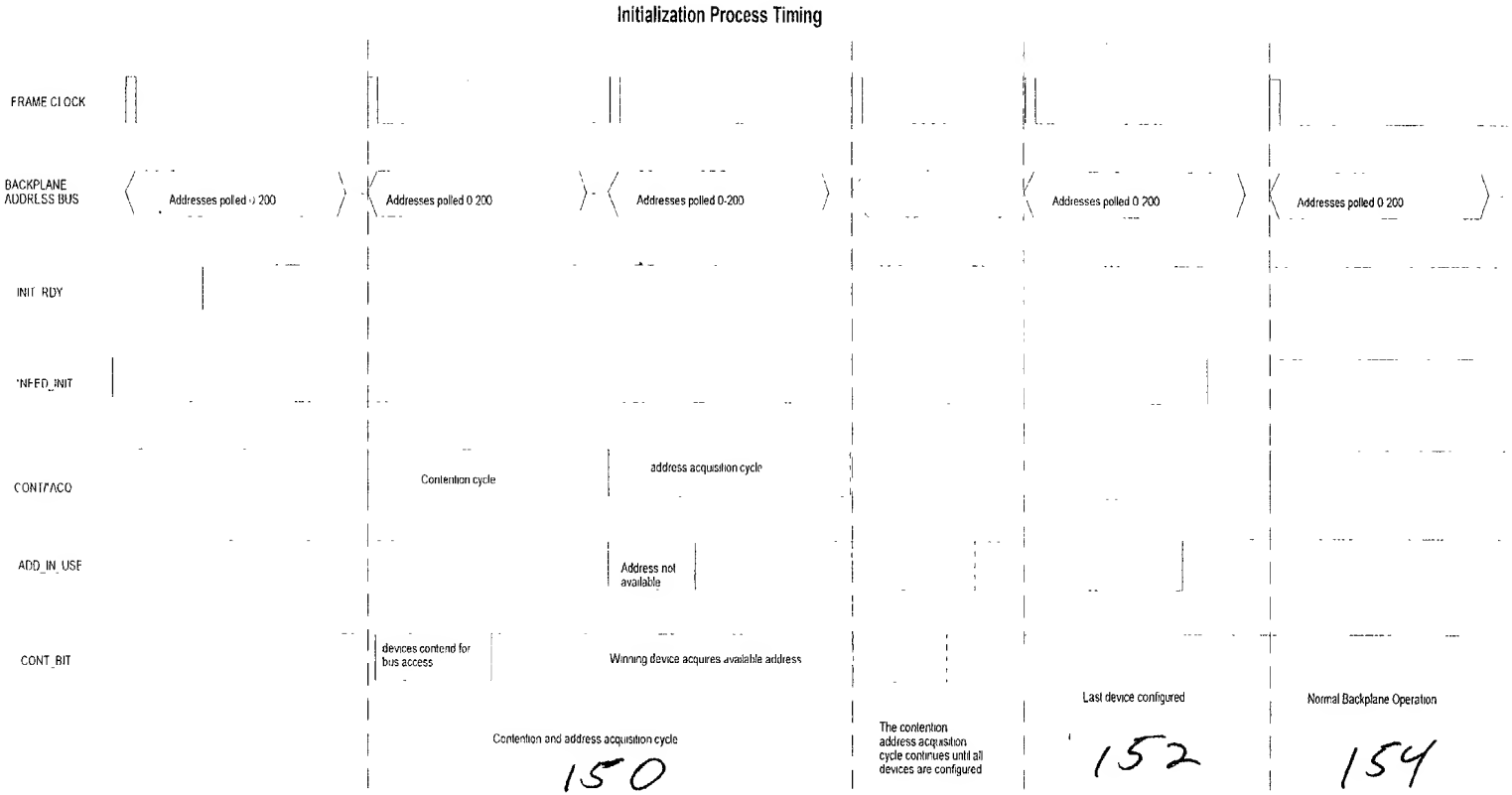

Initialization Process Timing
FRAME CLOCK
BACKPLANE ADDRESS BUS
INIT_RDY
NEED_INIT
CONTACO
ADD_IN_USE
CONT_BIT
Addresses polled 0 200
Addresses polled 0 200
Addresses polled 0-200
Addresses polled 0 200
Addresses polled 0 200
Contention cycle
address acquisition cycle
Address not available
devices contend for bus access
Winning device acquires available address
Contention and address acquisition cycle
150
The contention address acquisition cycle continues until all devices are configured
Last device configured
152
Normal Backplane Operation
154

Fig. 5

TOh050" E696h860

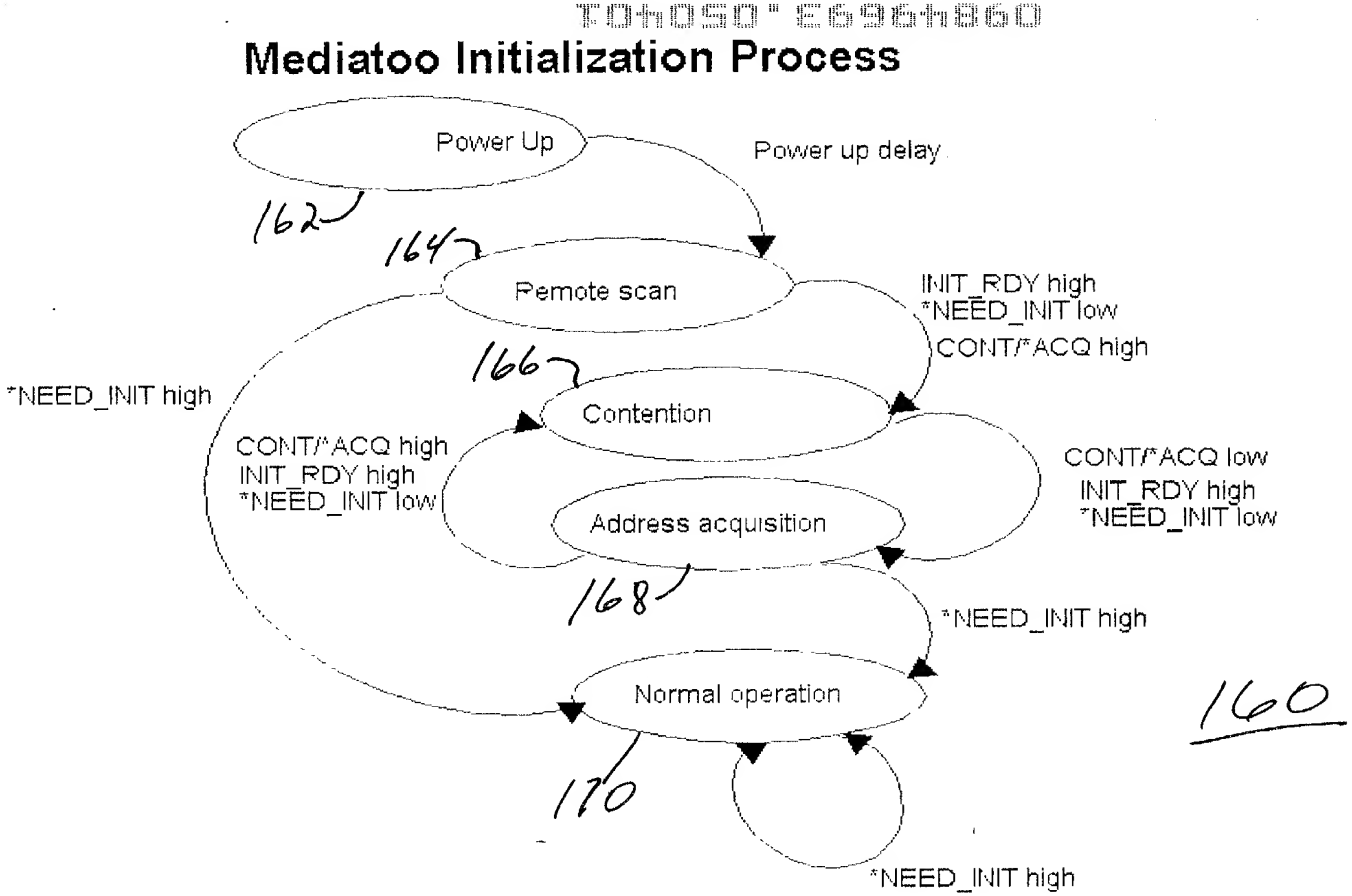


Fig. 6

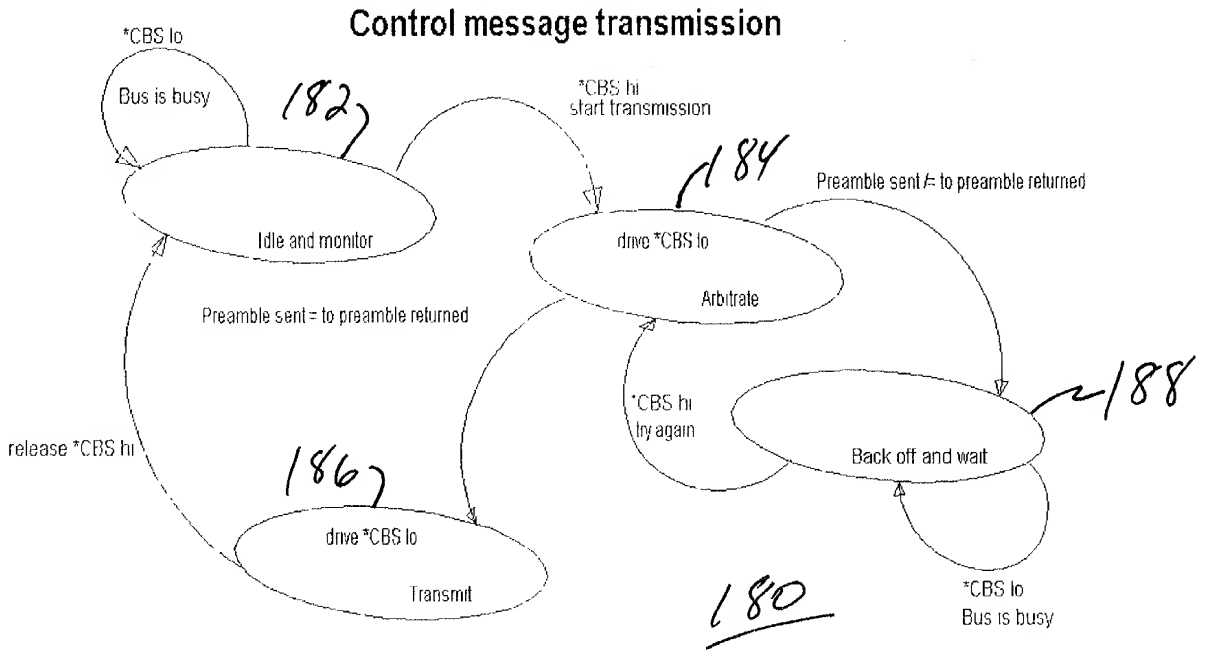


Fig. 7A

Preamble	Destination address	Source address	Number of Bytes in Payload	Payload	Checksum	
10 bytes	1 byte	1 byte	2 bytes	0-65Kbytes	2 bytes	

Fig. 7B

ÌOhOSO" Eó96hB6O

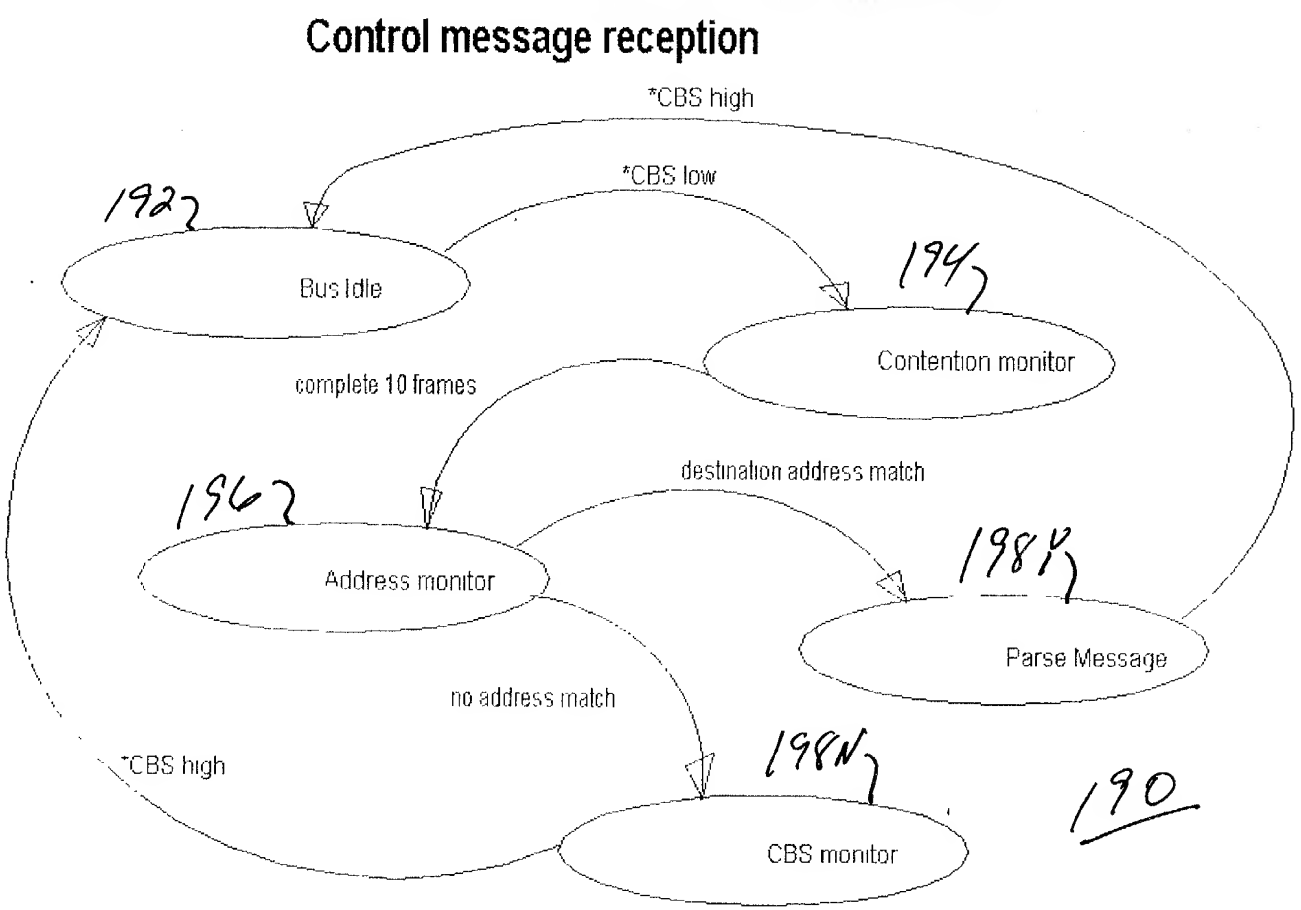


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Fig. 8

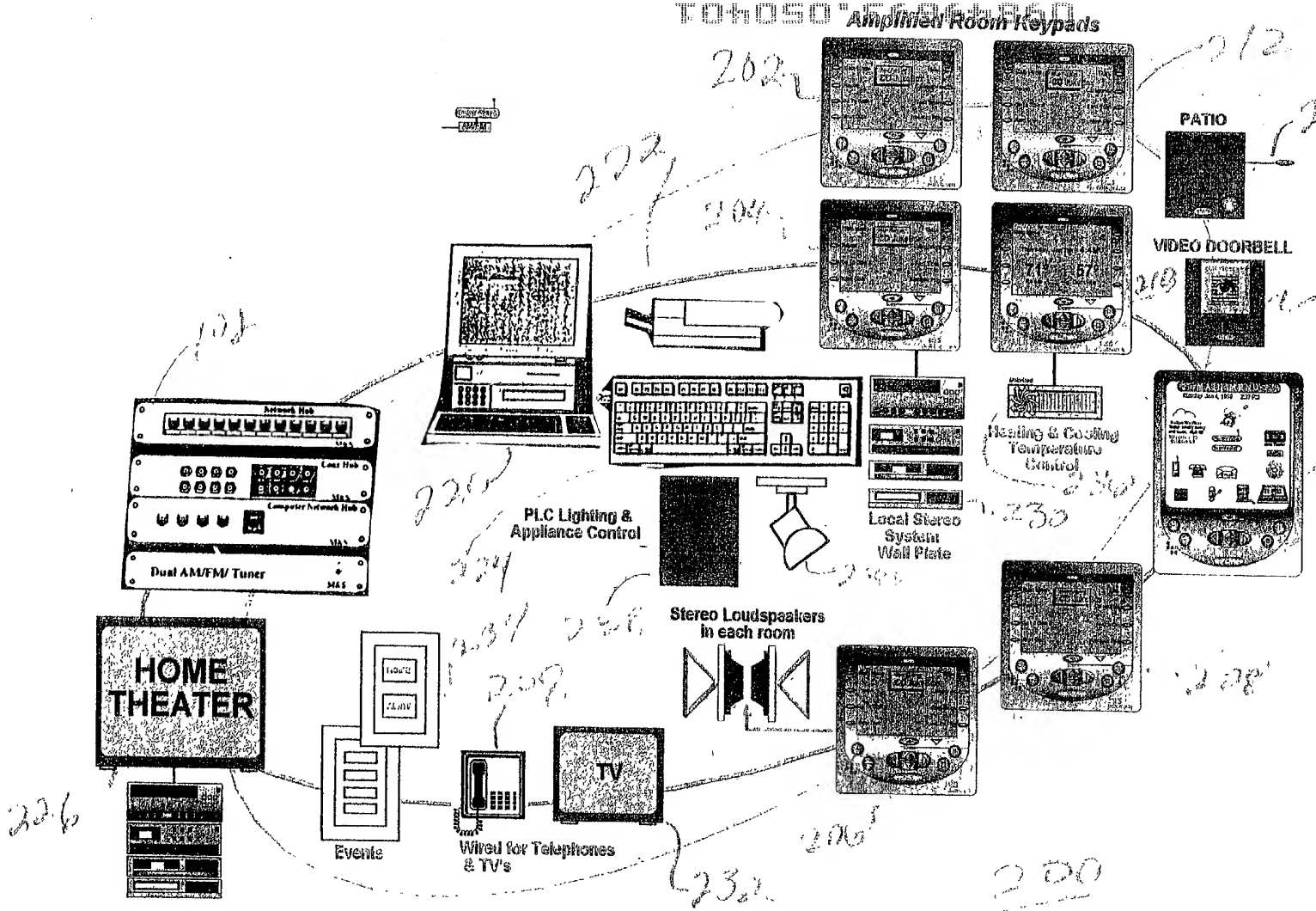

Amplified Room Keypads
PATIO
VIDEO DOORBELL
Heating & Cooling Temperature Control
Local Stereo System Wall Plate
PLC Lighting & Appliance Control
Stereo Loudspeakers in each room
HOME THEATER
Dual AM/FM/ Tuner
Events
Wired for Telephones & TV's
TV

Fig. 2

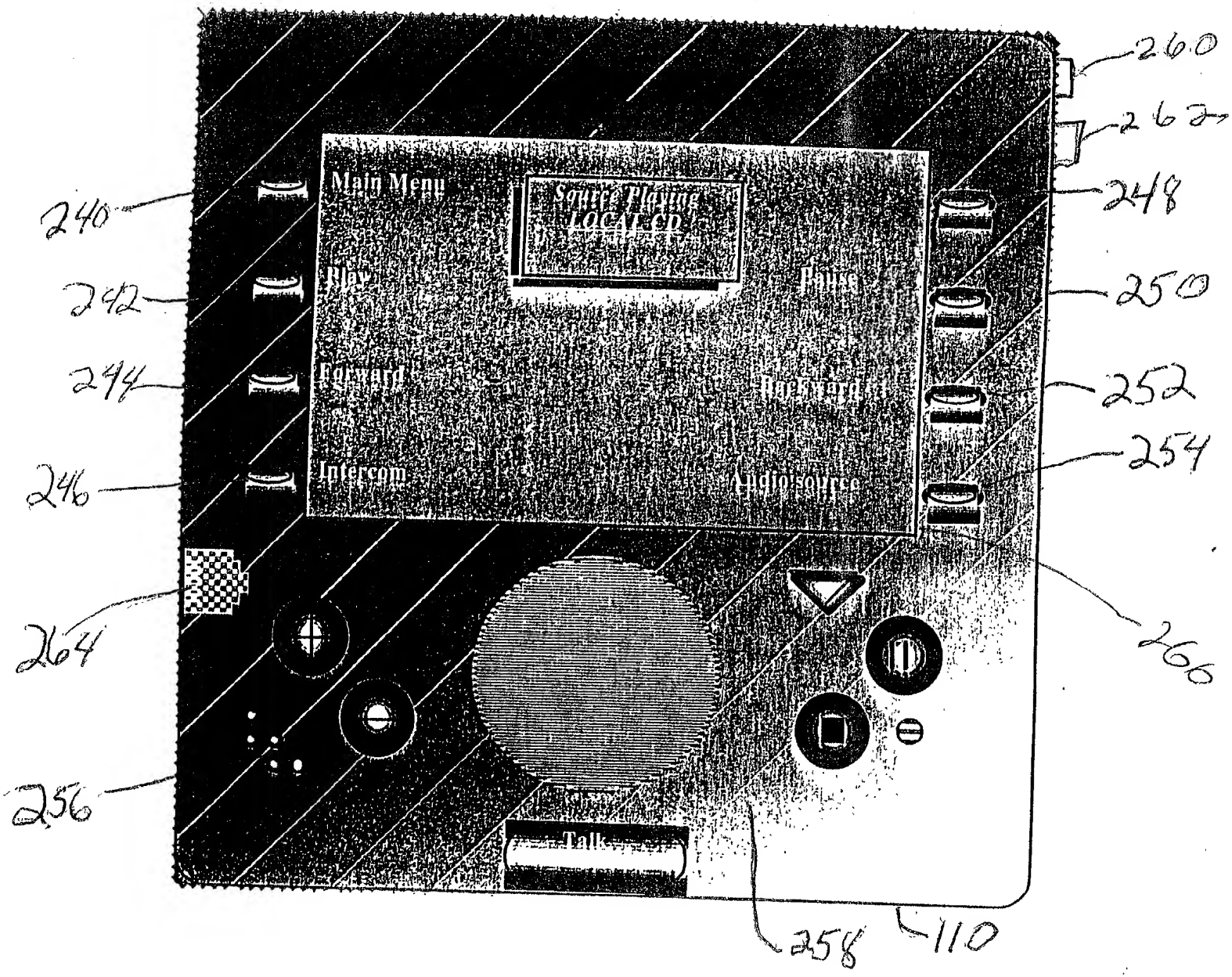
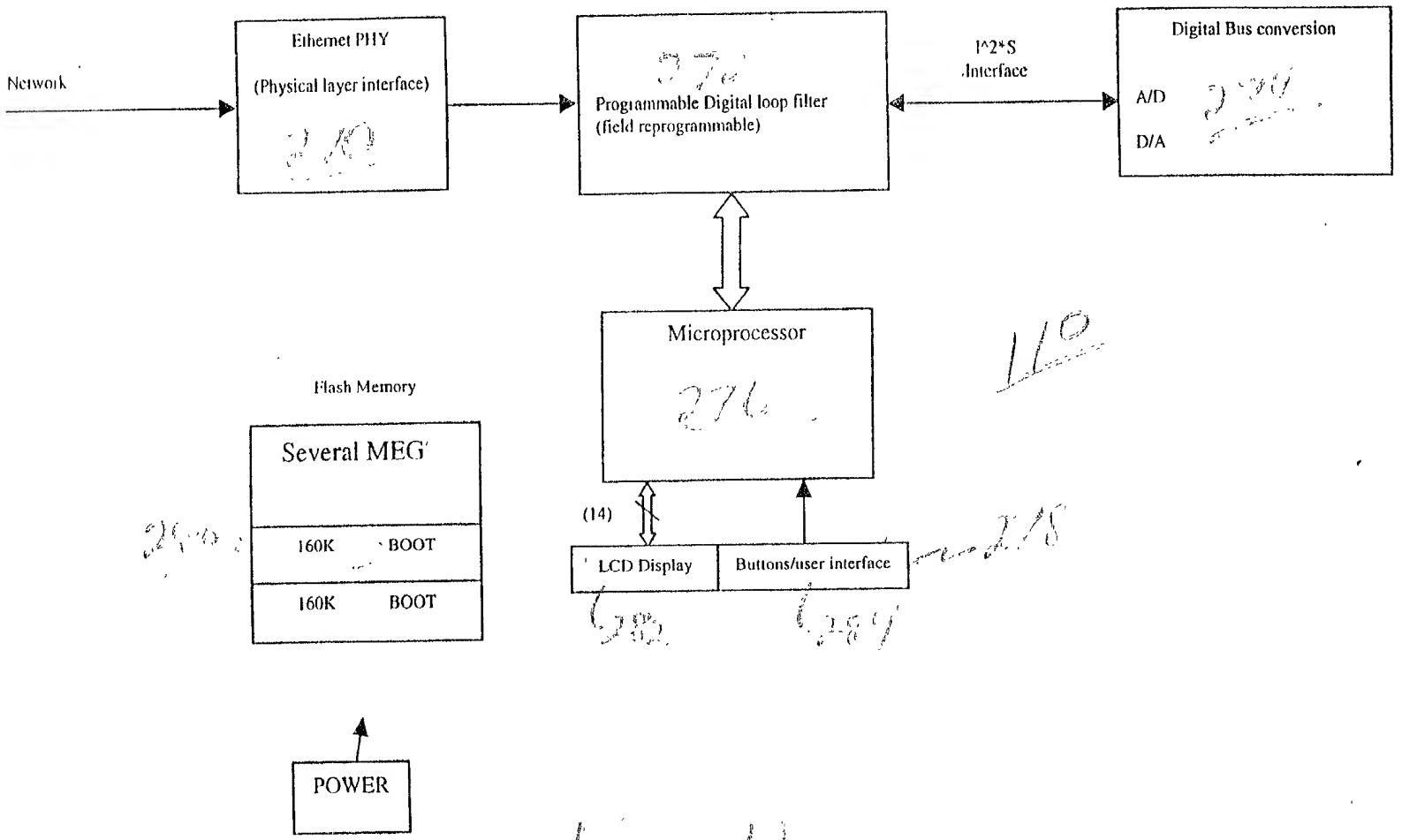

Main Menu
Source Playing
LOCAL CD
Play
Pause
Forward
Backward
Intercom
Digital Source
Talk
240
242
244
246
248
250
252
254
256
258
260
262
264
266
110

FIG. 10


Network
Ethernet PHY
(Physical layer interface)
Programmable Digital loop filter
(field reprogrammable)
I^2*S
Interface
Digital Bus conversion
A/D
D/A
Microprocessor
Flash Memory
Several MEG
160K BOOT
160K BOOT
(14)
LCD Display
Buttons/user interface
POWER

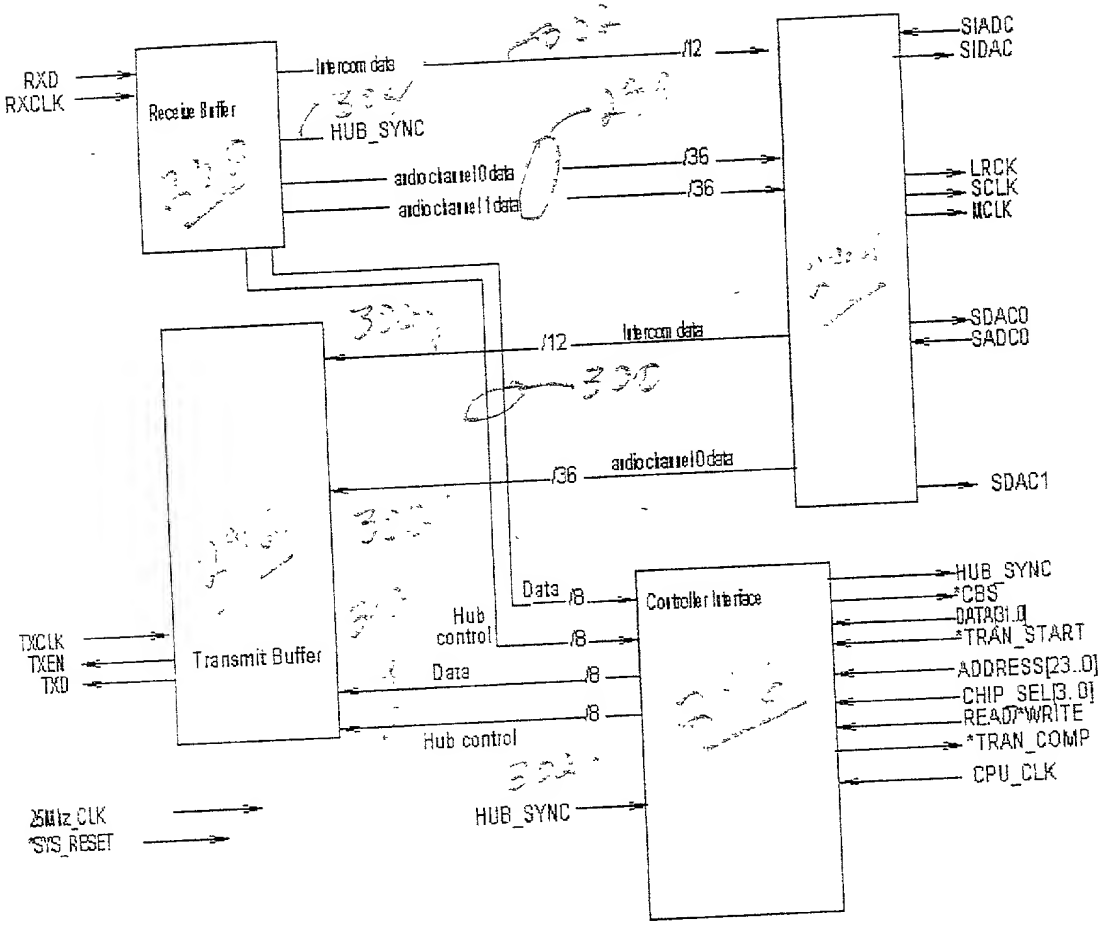

RXD
RXCLK
Receive Buffer
Intercom data
/12
HUB_SYNC
audio channel 0 data
audio channel 1 data
/36
/36
SIADC
SIDAC
LRCK
SCLK
MCLK
SDAC0
SADC0
SDAC1
/12
Intercom data
/36
audio channel 0 data
TXCLK
TXEN
TXD
Transmit Buffer
Data
/8
Hub control
/8
Data
/8
/8
Hub control
Controller Interface
HUB_SYNC
*CBS
DATA[3..0]
*TRAN_START
ADDRESS[23..0]
CHIP_SEL[3..0]
READ/*WRITE
*TRAN_COMP
CPU_CLK
25MHz_CLK
*SYS_RESET
HUB_SYNC

Fig. 12